

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1 and 3-9 are presently active in this case, Claims 1 and 3 having been amended by way of the present Amendment.

In the outstanding Official Action, the drawings were objected to for minor informalities. Submitted concurrently herewith is a Replacement Sheet which includes changes to Figures 9 and 10 to address the objections by adding the legend "Prior Art." Accordingly, the Applicants request the withdrawal of the objection to the drawings.

Claim 1 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 has been amended to "circulating" to "circulation" in line 9, and to remove the phrase "said respective refrigerant path." Accordingly, the Applicants request the withdrawal of the indefiniteness rejections.

Claim 1 was rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 or 4 of U.S. Patent No. 6,491,092. Claims 3-9 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 or 4 of U.S. Patent No. 6,491,092 in view of Torigoe et al. (U.S. Patent No. 5,701,760) or Nishishita (U.S. Patent No. 6,397,938 B1). A terminal disclaimer in compliance with 37 CFR 1.321(c) is being submitted concurrently herewith in order to overcome the rejections based on the judicially created doctrine of obviousness-type double patenting using U.S. Patent No. 6,491,092, which is commonly owned with the

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present application by Mitsubishi Heavy Industries, Ltd., of Tokyo, Japan. Accordingly, the Applicants request the withdrawal of the obviousness-type double patenting rejections.

Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by Sonoda et al. (U.S. Patent No. 4,153,106) or Aikawa et al. (U.S. Patent No. 5,651,268). Claim 3 was rejected under 35 U.S.C. 102(b) as being anticipated by Torigoe et al. Claim 3 was rejected under 35 U.S.C. 102(e) as being anticipated by Nishishita. Claims 4-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Torigoe et al. or Nishishita in view of Osthuys (U.S. Patent No. 5,806,586). For the reasons discussed below, the Applicants request the withdrawal of the art rejections.

Claim 1 of the present application has been amended to recites a two-block heat exchanger comprising, among other features, continuous refrigerant circulation spaces that are formed by abutting openings of adjacent refrigerant distribution parts, wherein at least one refrigerant circulation space has a cross-sectional flow area that changes along a length thereof. Claim 3 has been amended to recite a heat exchanger comprising, among other features, a first continuous inlet space, wherein a cross-sectional flow area of said first continuous inlet space changes along a length thereof. Claim 6 of the present application recites a heat exchanger comprising, among other features, a first continuous, wherein a cross-sectional flow area of said first continuous inlet space changes along a length thereof. The Applicants submit that none of the cited references, either taken singularly or in combination, teach a continuous space that has a cross-sectional flow area that changes along a length thereof, as recited in Claims 1, 3, and 6 of the present application.

The Sonoda et al. and Aikawa et al. references are cited against Claim 1. The Sonoda et al. reference describes an evaporator having an inlet pipe (5) and an outlet pipe (6), each

having bores (7) provided therein. The Sonoda et al. reference indicates that the bores (7) may have different sizes depending upon their positions.” (See column 3, lines 2-3, of the Sonoda et al. reference.) However, the cross-sectional flow area of the inlet pipe (5) and the cross-sectional area of the outlet pipe (6) remain constant along the length of the pipes. Accordingly, the Sonoda et al. reference does not disclose all of the limitations recited in Claim 1. The Aikawa et al. reference describes a refrigerant evaporator having a refrigerant distribution pipe (35) with outlet holes (53). The cross-sectional flow area of the distribution pipe (35) remains constant along the length thereof. Accordingly, the Aikawa et al. reference does not disclose all of the limitations recited in Claim 1. Thus, Claim 1 is believed to be in condition for allowance.

The Torigoe et al. and Nishishita references are cited against Claim 3. Neither the Torigoe et al. reference, nor the Nishishita reference is cited for the teaching of a continuous space that has a cross-sectional flow area that changes along a length thereof. The Official Action notes, for example, with respect to Claims 4-9 that the Torigoe et al. reference and the Nishishita reference do not disclose a continuous inlet space having a decreasing cross-sectional flow area from the open end to the closed end. (See page 6, first paragraph.) Furthermore, the Applicants submit that the Torigoe et al. reference and the Nishishita reference do not describe continuous spaces that have a cross-sectional flow area that changes along a length thereof. Accordingly, the Torigoe et al. reference and the Nishishita reference do not disclose all of the limitations recited in Claim 3. Thus, Claim 3 is believed to be in condition for allowance.

Claims 4 and 5 are considered allowable for the reasons advanced for Claim 3 from which they depend.

The Torigoe et al. and Nishishita references are each cited in combination with the Osthues et al. reference against Claim 6. As stated above with respect to Claim 3, neither the Torigoe et al. reference, nor the Nishishita reference is cited for the teaching of a continuous space that has a cross-sectional flow area that changes along a length thereof. The Official Action notes, for example, that the Torigoe et al. reference and the Nishishita reference do not disclose a continuous inlet space having a decreasing cross-sectional flow area from the open end to the closed end. (See page 6, first paragraph.) Furthermore, the Applicants submit that the Torigoe et al. reference and the Nishishita reference do not describe continuous spaces that have a cross-sectional flow area that changes along a length thereof. Additionally, the Applicants submit that the Osthues et al. reference also does not describe a continuous space that has a cross-sectional flow area that changes along a length thereof.

The Osthues et al. reference describes a heat exchanger with a refrigerant distributor. The heat exchanger includes an evaporator (12) having a distribution channel or duct (14) at an inlet side. The distributor duct (14) has a hollow cylindrical throttle insert (32) therein, which extends over the entire length of the duct (14). The throttle insert (32) has a plurality of throttle orifices (34, 36) spaced from one another at a distance of the exchanger ducts (16) in the vicinity of the branch points of the ducts (16). The throttle insert (32) also have a porous body (38) provided therein. The porous body (38) is a hollow cone that is tapered in the direction of flow.

The Applicants submit that the cross-sectional flow area of the Osthues et al. reference is the cross-sectional area of the throttle insert (32), and not the inner area of the porous body (38), as is suggested in the Official Action. The porous body (38), by its very nature, allows flow therethrough. Thus, the entire area within the throttle insert (32) is flow

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area. Thus, the throttle insert (32) defines a space that has a cross-sectional flow area that does not change along a length thereof. Accordingly, the Osthues et al. reference also does not disclose a continuous space that has a cross-sectional flow area that changes along a length thereof, as recited in Claim 6. Thus, Claim 6 is believed to be in condition for allowance.

Claims 7-9 are considered allowable for the reasons advanced for Claim 6 from which they depend.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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